

2011

MISSOURI  
STATE OF THE  
WORKFORCE  
REPORT





# EXECUTIVE SUMMARY



The 2011 State of the Workforce Report was developed as a planning tool for the Missouri Division of Workforce Development by the Missouri Economic Information Center (MERIC). Information for this report was compiled using the most current demographic, labor market and economic data from state and national agencies. This report examines the nature of Missouri's workforce and assesses both strengths and weaknesses. The main topics are economic indicators, workforce supply, emerging workforce and workforce demand.

The State is emerging from the worst recession in decades and the effects are being felt in many spheres of the economy. Job losses, company closures, reduced federal funding and an increase in the proportion of disadvantaged youth has left Missourians feeling unsure about their economic reality. Despite this uncertainty, there are several positive signs for the future. A proactive tax credit structure and a target cluster based approach creates a business climate increasingly conducive for the growth and expansion of industries. New jobs in the fields of Health care and Professional and Technical Services are projected to be added to the economy. Academic indicators reveal Missouri students are performing at higher than national averages and with concentrated focus on Science, Technology, Engineering and Mathematics (STEM) disciplines will have the potential to be a competitive incumbent workforce. The State also boasts a plethora of institutions of higher learning spread across the region that can develop college and career pathways at different skill levels and work closely with employers to ensure that education and training is responsive to market demands.

Finally the report outlines challenges for the State in creating a workforce system that can sufficiently support the changing needs of the economy and can ultimately lead to family supporting jobs.



# TABLE OF CONTENTS

EXECUTIVE SUMMARY . . . . .	3
ECONOMIC INDICATORS . . . . .	6
<i>THE NEW MISSOURI ECONOMY . . . . .</i>	<i>6</i>
<i>FOSTERING THE NEW ECONOMIC CLIMATE . . . . .</i>	<i>8</i>
WORKFORCE SUPPLY . . . . .	10
<i>POPULATION TRENDS . . . . .</i>	<i>10</i>
<i>LABOR FORCE CHARACTERISTICS . . . . .</i>	<i>11</i>
<i>INCOME AND POVERTY LEVEL . . . . .</i>	<i>13</i>
WORKFORCE IN TRAINING . . . . .	14
<i>EDUCATIONAL PREPAREDNESS . . . . .</i>	<i>14</i>
<i>ACADEMIC PERFORMANCE INDICATORS . . . . .</i>	<i>15</i>
<i>CONTINUING EDUCATION ENROLLMENT . . . . .</i>	<i>15</i>
WORKFORCE DEMAND. . . . .	17
<i>OCCUPATION AND INDUSTRY PROJECTIONS . . . . .</i>	<i>17</i>
<i>TARGET INDUSTRY CLUSTERS . . . . .</i>	<i>20</i>
FUTURE CHALLENGES . . . . .	21
REFERENCES . . . . .	22

## ECONOMIC INDICATORS

Missouri, like most states, was not immune to the larger affects of the national recession that began in the last months of 2007. Many industries were greatly impacted and will take years to recover. Some of these industries may never return and will need to be replaced with new and emerging enterprises. However, the state does have many factors that can drive businesses into the region for economic investment, and work to repair the damage left behind from the recession. Missouri is putting strong focus on promoting new industries and development strategies to foster a newer and stronger economic climate for the future.

### THE NEW MISSOURI ECONOMY

In the past couple of decades, a much different picture has emerged of Missouri with a shift from a goods producing to a service producing economy. Health Care, Information Technology, Education and Professional & Technical Services are the new leading industries replacing traditional ones such as Manufacturing. Figure 1 well explains this shifting trend observed in the employment of select industries over the last twenty years. The shaded areas represent periods of economic recession and show that employment in Manufacturing was negatively impacted during these periods, while industries such as Professional and Business Services and Health Care were relatively less impacted. The latter actually saw an increase in employment during these periods. These trends are not unique to Missouri, but in fact mirror a national trend that has been playing out over the past few decades. Manufacturing is still a vital part of the U.S. economy, but the significance of the service sector continues to grow.

FIGURE 1: MISSOURI EMPLOYMENT FOR SELECTED INDUSTRIES

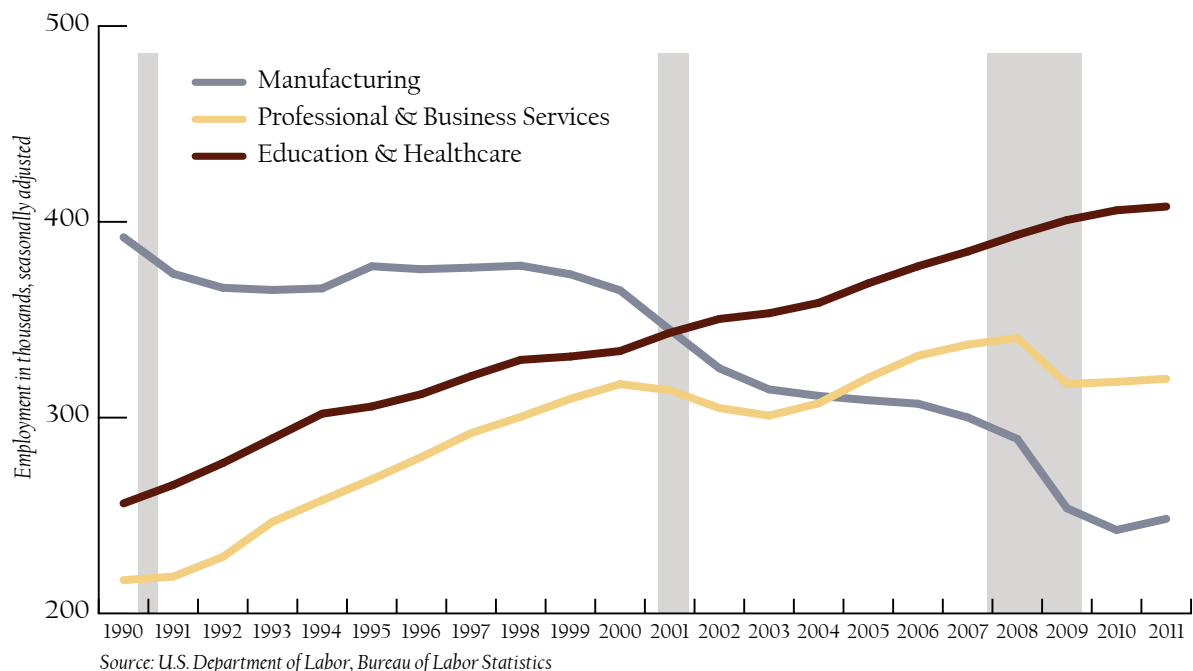


TABLE 1: NEW ECONOMY INDICATORS

INDICATOR	U.S. AVERAGE	MISSOURI SCORE	MISSOURI RANK OF ALL STATES	TOP RANKED STATE (SCORE)	BOTTOM RANKED STATE (SCORE)
Workforce Education	36.3	33.2	36th	Massachusetts (51.5)	West Virginia (20.3)
Fastest Growing Firms	0.0128%	0.0029%	37th	Massachusetts (0.0353%)	Wyoming (0.0000%)
Industry Investment R&D	3.31%	2.28%	24th	Delaware (7.82%)	Wyoming (0.40%)
High-Tech Jobs	4.1%	3.3%	29th	Massachusetts (7.7%)	Wyoming (1.4%)
Health IT	8%	35%	6th	Massachusetts (57%)	North Dakota (3%)
E-Government	5.00	6.01	10th	Utah (7.67)	Indiana (3.03)
Entrepreneurial Activity	0.30%	0.20%	48th	Georgia (0.50%)	Pennsylvania (0.17%)
Overall Score	62.0	50.8	33rd	Massachusetts (92.6)	Mississippi (35.3)

Source: The 2010 State New Economy Index: Benchmarking Economic Transformation in the States.

One way to examine how Missouri is fairing in this new economy is to look at the 2010 State New Economy Index<sup>1</sup>, released by the Kauffmann Foundation and the Information Technology and Innovation Foundation. This report looks at all 50 states and their competitive ability to survive times of economic change. The highest ranking states are those that have a large number of high-tech firms, entrepreneurship, and a higher concentration of workers that have a two-year degree or higher. Those states ranking the lowest tend to have more manufacturing and low-cost industries which offer temporary solutions for a lasting economy, but no sustained growth.

Missouri finishes roughly in the middle of the scale at 33rd place. Large advances in the IT field across the state however, may assist future growth. Table 1 above outlines seven of the top economic indicators that help trigger growth and compares Missouri with the national average. While the state has advances with the computer science field, as seen with the Health IT and E-Government indicators,

there is still more work to be done in driving home grown talent as seen with the lower rankings in Entrepreneurial Activity and Workforce Education.

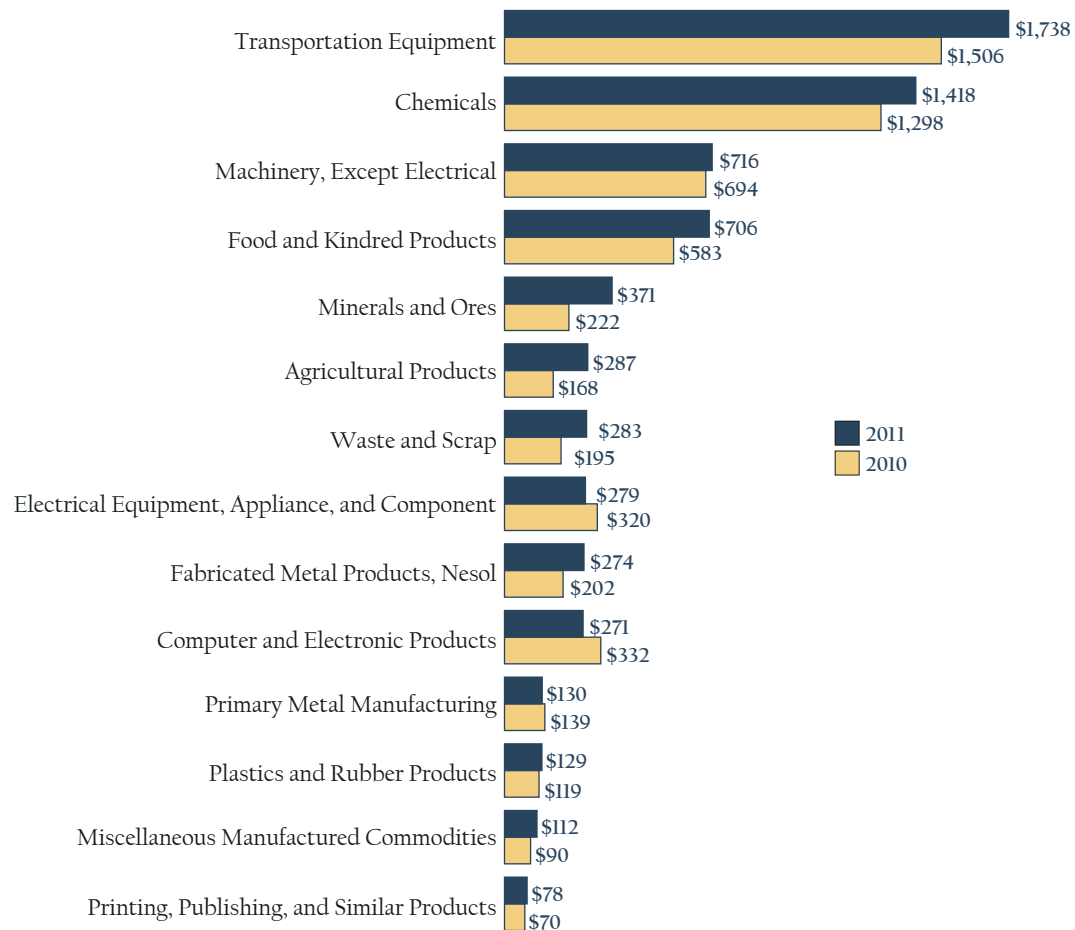
Missouri has also begun to focus on its new Targeted Industry Clusters to help foster and develop more economic growth in the state. These new clusters are: Advanced Manufacturing, Energy Solutions, Biosciences, Health Sciences and Services, Information Technology, Financial and Professional Services, and Transportation and Logistics. These Target Industry Clusters were chosen by examining the strengths and advantages that Missouri and its regions have the ability to capitalize in<sup>2</sup>. More advanced and skilled workforces will be needed for the new industries, and they must be prepared for the emerging sectors that require more experience and training within the Science, Technology, Engineering, and Mathematics fields. Large investments in expanding broadband throughout the state in the next two years will also expand opportunities for growth.

## FOSTERING THE NEW ECONOMIC CLIMATE

Missouri has other advantages at its disposal that can help to increase industry and workforce investment to the region. The state's economy has been growing steadily for the past 10 years, save for one dip in the 2009 gross state product, which was experienced by 50 states. Between 2009 and 2010 there was a 2.5 percent increase in the gross state product (GSP), increasing Missouri's total output to over \$244 billion in 2010. Across all states, Missouri has the 22nd largest GSP, and of those in the surrounding Midwest, only Illinois and Tennessee have larger economies<sup>3</sup>. This increase in the gross state product shows that industries are continually investing in Missouri and its workforce.

Missouri exports are also making great progress. For the first half of 2011, exports totaled \$7.1 billion, which is almost a 14 percent increase since the same time period in 2010. As seen in Figure 2, transportation equipment and chemicals are the top two exporting sectors for the state while the largest growth is seen in the agricultural products, mineral and ores, and waste and scrap categories<sup>4</sup>.

FIGURE 2: TOP MISSOURI EXPORTS THROUGH 2ND QUARTER 2011  
(IN MILLIONS OF DOLLARS)



Source: WiserTrade.org. State Exports Data: Missouri



An additional advantage is the favorable business climate Missouri can offer new and expanding industries. Missouri ranks 16th in the U.S. in the Tax Foundation's 2011 State Business Tax Climate Composite Index.<sup>5</sup> This Index compares the states in five areas of taxation that impact business: corporate taxes; individual income taxes; sales taxes; unemployment insurance taxes; and taxes on property, including residential and commercial property. This index not only compares states based on the tax rate, but also the strong and weak aspects of a state's tax structure. The Corporate Tax component index, specifically, finds Missouri 5th among states, indicating corporate income taxes in Missouri are low and the tax system is relatively uncomplicated – both benefiting business development in the state.

In addition to lower taxes, another factor which is beneficial to the Missouri economy is its affordable cost of living. The cost of living measures the comparable costs for goods and services within a national perspective or across regions. For 2011, Missouri has the 13<sup>th</sup> lowest cost of living for the nation Table 2, making this a more desirable place for workers to live. If businesses are able to get more products from their spending dollar in Missouri than elsewhere, it can be a major attraction for them to be located here.

TABLE 2: COST OF LIVING INDICES FOR PARTICIPATING MISSOURI CITIES  
2ND QUARTER 2011

CITY	INDEX	GROCERY ITEMS	HOUSING	UTILITIES	TRANSPORTATION	HEALTH CARE	MISC. SERVICES
Springfield MO	88.4	98.1	76.6	79.5	90.8	97.2	95.9
Joplin MO	90	96.7	74.6	115.8	96	96.4	90.3
St. Louis MO-IL	90.2	91.6	74.6	104	101.6	98.7	94.7
Columbia MO	90.8	95.7	80.2	90	95.3	97.5	96.4
<b>Missouri</b>	<b>92.7</b>	<b>96.1</b>	<b>80.1</b>	<b>99.0</b>	<b>96.7</b>	<b>97.1</b>	<b>98.9</b>
St. Joseph MO	93.8	97.4	82.7	98	96.4	93.4	100.1
Jefferson City MO	96.9	93.9	83.6	95.3	99.2	97.7	109.7
Kansas City MO-KS	99	99.2	88.7	110.5	97.8	98.9	105
U.S. Average	100	100	100	100	100	100	100

Source: Bureau of Economic Analysis: Cost of Living Data Series

Having a skilled and educated workforce that is ready and able to meet the demands of an evolving economy will be the key to sustaining and attracting new industries to the state. More emphasis will have to be placed on training and education, directed by industry needs, so that workers can stay competitive.

# WORKFORCE SUPPLY

One of the most important factors for a region's competitiveness is the availability of affordable and skilled labor.

## POPULATION TRENDS

The latest population data from the U.S. Census Bureau indicates that in 2010 St. Louis County had the largest population with 998,954 constituting 16.7 percent of the state's total estimated population. The next five most populous counties include Jackson (674,158), St. Charles (360,485), St. Louis City (319,294), and Greene (275,174). The state currently has slightly less than 50 percent of its population in the 25- 59 years age group as seen in Table 3.

Missouri's currently ranks as the seventeenth most populous state in the nation. Future population projections indicate continued slow growth of approximately six percent per decade as compared to the national predictions of around ten percent.<sup>6</sup>

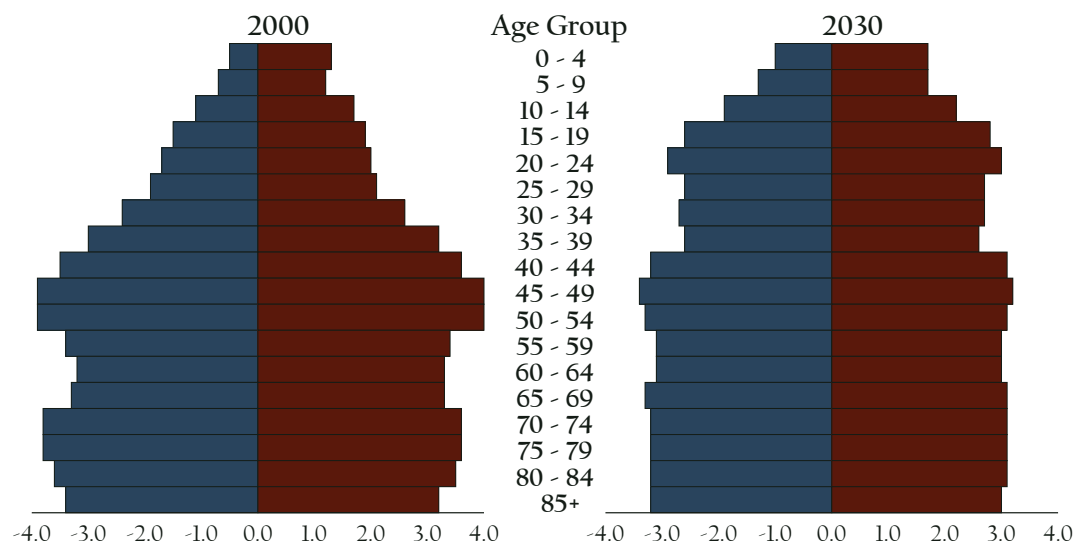
TABLE 3: MISSOURI POPULATION BY AGE GROUP

AGE	NUMBER	PERCENT
Under 5 years	390,237	6.5%
5 to 14 years	787,388	13.1%
15 to 24 years	837,075	14.0%
25 to 44 years	1,524,083	25.4%
45 to 59 years	1,278,557	21.3%
60 to 74 years	783,783	13.1%
75 years and older	387,804	6.5%
Total Population	5,988,927	100.0%

Source: U.S. Census Bureau, 2010 Census

As indicated in Figure 3 by the pyramid like distribution in 2000, the largest cohorts were in the middle age group followed by the 5-19 year old age groups. By 2030, this distribution is expected to look more rectangular with the high growth in the older age group cohorts and consistently narrow growth in the lower half of the distribution.

FIGURE 3: MISSOURI POPULATION PYRAMIDS



Source: MO Office of Administration - Budget & Planning - Population Projections

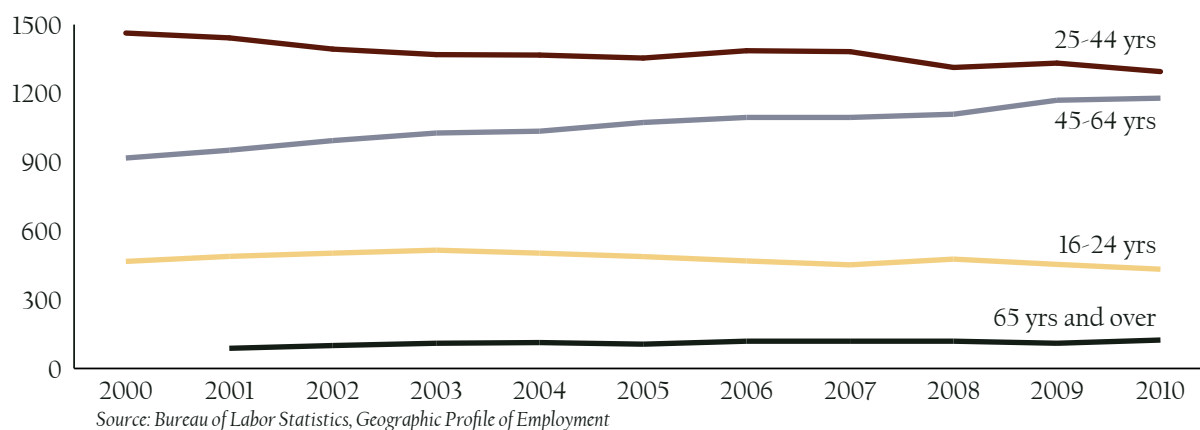
Additionally, by 2030, persons over age 65 will represent more than one-fifth of all Missourians. Between 2000 and 2030 senior citizens are expected to increase by 87 percent while Missouri children (under the age of 18) and the over 18 populations are expected to increase by roughly seven percent and 25 percent respectively.

Historically population shifts in the state have been from rural agricultural areas to urban areas. Projections indicate this trend will continue with rapid suburban growth around Kansas City, St. Louis, and Springfield. St. Louis County. Other agricultural counties will see a significant decline in population.

### LABOR FORCE CHARACTERISTICS

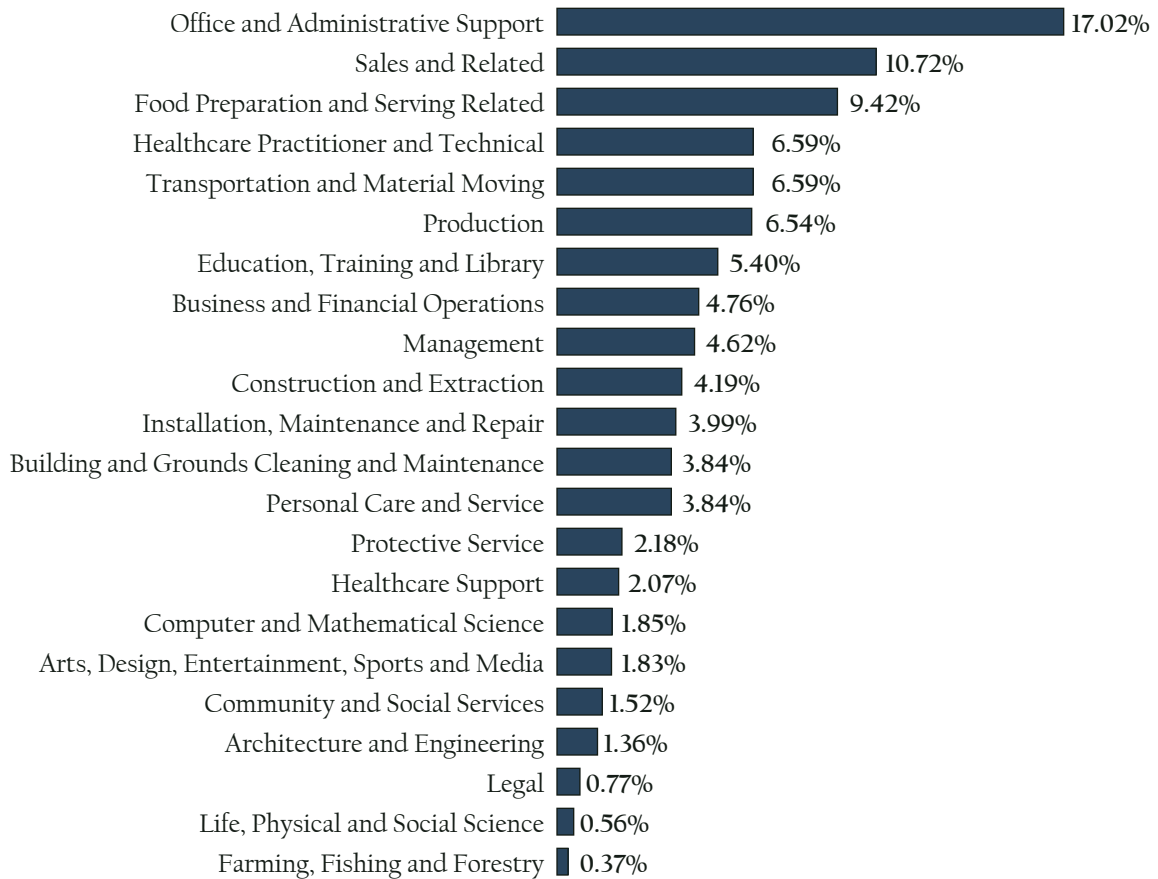
The demographics of Missouri's labor force are also changing. Labor Force is defined as the number of people employed or seeking employment in a geographical area. Since the beginning of this decade, Missouri's labor force has been getting older as indicated by the upward trending in the 45-64 year age group in Figure 4. On the other hand there has been a decline in the crucial residential labor force in the population cohorts of 16-24 years and 25-44 years which usually feed the employment demands. A steady trend has been observed in the 65 years and over age group, providing further evidence of delayed retirement and an aging workforce.

FIGURE 4: MISSOURI LABOR FORCE BY AGE ■ 2000-2010



Nationally and statewide labor shortages are predicted in the next ten years with mass retirements and inadequate supply of new workers. The state mirrors the nation in this aging workforce trend.

FIGURE 5: PERCENTAGE OF 2010 JOBS BY OCCUPATION CLUSTER



Source: MERIC, 2010-2012 Short-term Occupational Projections

Figure 5 above shows the distribution of where Missourians are currently employed. As of 2010, the highest percentage of jobs in the state was in the Office and Administrative Support occupational cluster. It is important to note these jobs are spread across many industries and include occupations such as First-Line Supervisors/Managers, Accounting Clerks, Office Support Staff, Loan Officers etc. that provide vital day to day operational support to businesses. Missouri's employment patterns match national data trends.

Missouri's population projections indicate slow growth. With older workers retiring employers face the risk of inadequate knowledge and skill transfer to the younger workforce. It will be crucial that incumbent workers who replace these retirees are trained up to maintain business productivity. The state would also benefit from increased efforts to retain and attract younger workers. Programs that link students to local businesses during the education process are an example.

A slightly better measure of the economic well being of a region is the per capita income, defined as the total personal income divided by the total population. In 2010, the per capita personal income in Missouri was \$36,979 as seen in Figure 6. Nationally, per capita income was higher than Missouri at \$40,584.

Year	Number of Employees
2000	27,891
2001	28,622
2002	29,255
2003	30,190
2004	31,353
2005	32,162
2006	33,903
2007	35,387
2008	36,884
2009	36,181
2010	36,979

Source: U.S. Census Bureau, Small Area Estimates

Under 18 and below poverty

- 35.0% – 45.1%
- 28.2% – 34.9%
- 22.9% – 28.1%
- 17.5% – 22.8%
- 6.8% – 17.4%

Source: American Community Survey—2009

Source: American Community Survey—2009

## WORKFORCE IN TRAINING

The evolving new industries need a more skilled, educated and adaptable workforce in order to grow within this new economy. Missouri is supplying this demand through a large number of universities and training facilities within its borders. Overall, the state has 132 Title IV degree-granting institutions, and has awarded a total of 85,021 degrees and certificates in the 2008-2009 school year.<sup>7</sup> Education and training of Missouri's workforce needs to be the centerpiece of new economic policy to drive a more advanced and sophisticated workforce.

Examining past attempts at increasing the education and skill levels of Missourians show the state has made large strides. In 1993, the population of Missouri was just under 4 million. Over 518,900 of those residents, or nearly 13 percent, lacked the basic literacy skills needed for the workplace. By 2003, the population had expanded by 8 percent to over 4.3 million, but the literacy rate shrank to 7 percent of the population, or roughly 302,000 within the state.<sup>8</sup> By putting more emphasis on early education and development, the state was able to cut the illiteracy rate by 41%.

Missouri has a great opportunity to continue positive trends like this, with its large number of training institutions. Missouri exceeds the national average of 88 institutions per state, with 132 institutions of higher learning. Of these institutions, forty-four are two-year colleges that allow for faster workforce training and lower costs to the students.<sup>7</sup>

### EDUCATIONAL PREPAREDNESS

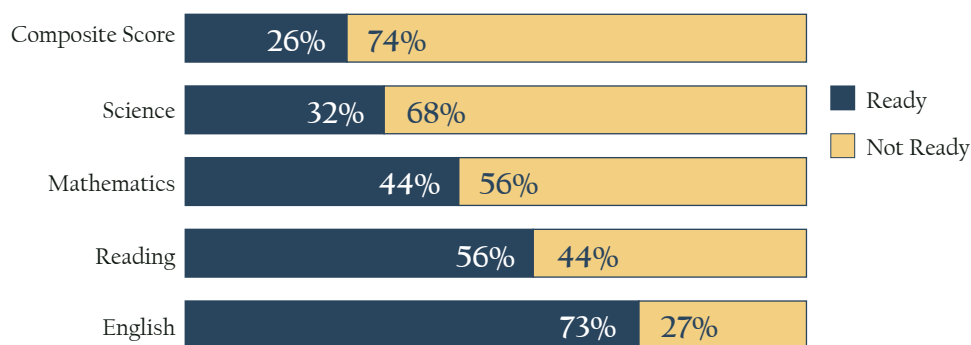
Workforce education begins at an early age, with basic skills. In addition, an increased focus on Science, Mathematics, and Technology-based education is a common need among emerging industries. In the *Measuring Up* 2008<sup>9</sup> report, Missouri scored a C+ statewide in our education system for K-12 students. In order for students to better compete in a global workforce, these "in-demand" skills need to be addressed more aggressively.

The Missouri high school drop outs issue has to be addressed in order to ensure a trained and accessible workforce, otherwise advanced training will be difficult to achieve. The rate of high school drop-outs across the State has remained steady at 13.8 percent (calculated as percent of total enrolled students) since the 2006-2007 school year. Over a five-year period, from 2006-2011, the number of students enrolled and graduating high school has been 9 percent while the number of drop outs is higher at 9.2 percent. The U.S. Census Bureau's 2009 American Community Survey states that for Missouri's population of 18-24 year olds, 17.3 percent have less than a high school graduate education, compared to the U.S. average of 16.4 percent. Over 30 percent of the same population has only a high school diploma.<sup>10</sup> This population of less educated workers will have fewer, well paying, career opportunities without further training. Ensuring high school completion among Missouri's students will be a critical stepping stone to any post secondary and job related training.

## ACADEMIC PERFORMANCE INDICATORS

While preparing for high school graduation, students who wish to enroll in certification programs or universities after college complete the ACT Test. This series of tests examine a student's level of preparation in Science, Mathematics, English, and Reading. Colleges and universities use these scores, on a scale of 1-33, to determine your readiness and capabilities for higher learning. For Missouri's graduating class of 2011, only 26 percent of all students who took the ACT met the College Readiness Benchmark Scores for across all four categories as indicated in Figure 8. The average composite score was a 21.6 for Missouri students who completed the tests, compared to the 21.1 national average for test-takers. This score of 21.6 score has been the average composite test score for Missourians since 2007 although the number of test takers has grown by over 3,200 students.

FIGURE 8: PERCENT OF STUDENTS MEETING ACT COLLEGE READINESS BENCHMARK SCORES



Source: ACT Profile Report State: Missouri, Graduating Class of 2011

In the 33 public and private Baccalaureate or Higher-Degree granting institutions in Missouri, over 46 percent of ACT test-takers received a composite score of 24 or higher, which is equal to or higher than the ACT Benchmark Scores for each of the four subjects.<sup>11</sup>

## CONTINUING EDUCATION ENROLLMENT

The number of full-time enrollment to public and private Associate and Baccalaureate-degree granting institution in Missouri continues to rise annually. The highest enrollment trends for higher education continue to be in the Public Baccalaureate and Higher Degree-Granting Institutions, which in 2009 made up almost 41 percent of all enrolled students. Interestingly, between 2004 and 2009, Public Certificate and Associate Degree granting associations have seen an increase in enrollees by about 25 percent over the six year period (see Table 4).<sup>12</sup> These educational institutions provide specialized courses in different disciplines in a relatively shorter time frame than the traditional four-year college or university and are thus able to fulfill labor market demands faster.

TABLE 4: ENROLLMENT TRENDS IN MISSOURI'S HIGHER EDUCATION

INSTITUTION	FALL 2004	FALL 2005	FALL 2006	FALL 2007	FALL 2008	FALL 2009
Public Baccalaureate and Higher-Degree-Granting Institutions	99,245	101,568	102,885	104,344	106,936	110,951
Public Baccalaureate and Higher-Degree-Granting Institutions	99,245	101,568	102,885	104,344	106,936	110,951
Public Certificate and Associate Degree-Granting Institutions	54,130	53,890	54,223	56,879	58,564	67,738
Private Not-For-Profit Baccalaureate and Higher-Degree-Granting Institutions	81,027	83,590	85,347	87,006	87,637	92,415
Private Not-For-Profit Certificate and Associate Degree-Granting Institutions	628	563	601	1,320	1,610	731
<b>State Total</b>	<b>235,030</b>	<b>239,611</b>	<b>243,056</b>	<b>249,549</b>	<b>254,747</b>	<b>271,835</b>

Source: Missouri Department of Higher Education. Table 33: Historical Trend in Total Full-Time Equivalent Enrollment at Public Institutions, Fall 2004-Fall 2009.

As previously mentioned, more education and training in the Science, Technology, Engineering, and Mathematics (STEM) degrees is essential to prepare for the new economy and workforce needs. For the 2009-2010 school year, 73,770 degrees were awarded to graduates across all fields in the state. 21 percent of those (15,409) were classified as STEM degrees.<sup>13</sup>

Table 5 shows the most popular STEM degree disciplines for Missourians in the 2009-2010 school year was in the field of Health Care, with Engineering and Engineering Technologies at a distant second.

TABLE 5: GRADUATES WITH STEM-RELATED DEGREES FOR FY 2009

INSTITUTION	DEGREE DISCIPLINE				
	COMPUTER SCIENCE	ENGINEERING/ ENG. TECHNOLOGY	HEALTH	LIFE/ PHYSICAL SCIENCES	MATHEMATICS
Public Baccalaureate and Higher-Degree-Granting Institutions	660	2,283	2,487	1,636	243
Public Certificate and Associate Degree-Granting Institutions	223	554	2,140	6	1
Private Not-For-Profit Baccalaureate and Higher-Degree-Granting Institutions	499	468	2,796	1,214	199
Private Not-For-Profit Certificate and Associate Degree-Granting Institutions	0	0	0	0	0
<b>State Total</b>	<b>1,382</b>	<b>3,305</b>	<b>7,423</b>	<b>2,856</b>	<b>443</b>

Source: Missouri Department of Higher Education. Table 97: Total Awards Conferred by Public Institutions, By Discipline Area, FY2009

Missouri has to battle the state's high school drop-out rates by increasing the number of graduates completing high school on-time, as well as increasing the number of enrollees into postsecondary education and training. Emphasis on student preparation and college readiness needs to be addressed more aggressively in order to prepare those entering the workforce.



# WORKFORCE DEMAND

As discussed in earlier sections, this recession too caused shifts in occupational growth across industries. To capture such changes in employment patterns long and short term employment projections for the state are created for both industries and occupations. Long-term projections provide a ten year outlook, while short-term provides a two year outlook. The main purpose of these projections is to understand the future employment demands thus allowing for informed decision making. Knowing which occupations and industries are growing and which are shrinking can assist students in making career choices, and also education training providers and workforce developers focus services to meet the labor market demand.

## OCCUPATION AND INDUSTRY PROJECTIONS

Between 2008 and 2018, Missouri's employment is projected to grow by 3.32 percent across all occupations and there will be 829,000 job openings due to growth or replacement.<sup>14</sup> Growth openings are new jobs that are added to the economy, while replacement openings are vacancies created by worker mobility or retirements, but are not new jobs.

As seen in Figure 9, by the year 2018 almost fifty percent of the new jobs created due to growth in the state will require either a short-term on-the job training or a Bachelor's Degree.

FIGURE 9: PROJECTIONS OF JOBS CREATED DUE TO GROWTH BY 2018



Source: MERIC, 2008-2018 Missouri Long-term Occupational Projections

During this ten year time period (2008-2018), the 20 occupations with the fastest projected growth in the state include ten health care-related occupations and two finance-related occupations, Table 6. All top 20 occupations have growth rates that are over six times that of the state's projected average percentage change of 3.32.

TABLE 6: TOP 20 FASTEST GROWING OCCUPATIONS 2008–2018

OCCUPATION	2008 ESTIMATED EMPLOYMENT	2018 PROJECTED EMPLOYMENT	PERCENT CHANGE	AVERAGE ANNUAL OPENINGS	AVERAGE ANNUAL WAGE
Biomedical Engineers	150	250	62.25%	12	\$67,180
Home Health Aides	12,960	19,400	49.62%	772	\$19,540
Coil Winders, Tapers, & Finishers	280	410	45.00%	22	\$63,280
Extruding, Forming, Pressing, & Compacting Machine Setters, Operators, & Tenders	18,140	25,220	39.04%	934	\$18,710
Materials Engineers	670	900	33.53%	35	\$80,700
Personal and Home Care Aides	360	470	33.52%	24	\$46,140
Computer-Controlled Machine Tool Operators, Metal & Plastic	2,020	2,650	31.34%	104	\$67,090
Athletic Trainers	5,210	6,790	30.17%	251	\$74,790
Pharmacy Technicians	4,440	5,730	28.87%	196	\$35,420
Medical Equipment Repairers	1,080	1,380	27.29%	57	\$27,350
Mixing and Blending Machine Setters, Operators, & Tenders	10,540	13,360	26.75%	548	\$24,560
Industrial Engineers	1,270	1,600	25.94%	55	\$71,110
Skin Care Specialists	3,460	4,330	25.14%	124	\$91,280
Biochemists & Biophysicists	4,500	5,600	24.30%	157	\$50,250
Occupational Therapist Assistants	8,220	10,200	24.12%	363	\$25,320
Electrical & Electronic Equipment Assemblers	690	850	23.80%	29	\$65,590
Dental Hygienists	920	1,130	23.09%	48	\$42,870
Dredge Operators	1,400	1,710	22.69%	60	\$36,820
Physical Therapist Assistants	2,340	2,860	21.93%	99	\$63,000
Medical Scientists, Except Epidemiologists	4,980	6,060	21.77%	202	\$33,100

Source: MERIC, 2010-2012 Missouri Long-term Occupational Projections

All occupations are assigned a typical education or training category that best reflects the standard training needs to gain employment in that occupation. The training categories are then grouped into High-, Middle-, or Low-Skill occupations. Those requiring only short-term on-the-job training, such as a waiter or waitress occupation, are classified as low-skill occupations. Those occupations requiring a bachelor's degree or higher, such as a doctor or lawyer, are considered high-skill occupations. All other occupations that require moderate-term on-the-job training, but less than a bachelor's degree are considered to be middle-skill occupations. These middle-skill occupations make up the majority of employment in Missouri, and most often have the most openings within projections' time periods.

Middle-skill occupations make up 43.7 percent of all occupations in Missouri, and between 2008 and 2018 are expected to have more than 162,600 growth openings in the ten years. These occupations have a relatively short training period and thus provide a means of re-employment for dislocated workers who can re-engage in the workplace. In Table 7 (next page), it is obvious that though highest overall percentage change in employment is observed in the high-skill occupations, it is the middle skill jobs that have the largest number of openings due to growth.

TABLE 7: MISSOURI EMPLOYMENT OPENINGS BY EDUCATIONAL LEVEL

SKILL AND EDUCATION LEVEL	EMPLOYMENT		PERCENT CHANGE	OPENINGS	
	2010	2012		TOTAL	GROWTH
<b>Low Skill Jobs</b>	<b>1,040,520</b>	<b>1,062,970</b>	<b>2.1%</b>	<b>333,595</b>	<b>47,502</b>
Short-Term On-the-Job Training	1,040,520	1,062,970	2.1%	333,595	47,502
<b>Middle Skill Jobs</b>	<b>1,251,460</b>	<b>1,279,990</b>	<b>2.3%</b>	<b>320,732</b>	<b>65,752</b>
Moderate-Term On-the-Job Training	522,930	524,090	0.8%	131,472	24,853
Long-Term On-the-Job Training	205,050	207,030	0.9%	51,888	8,149
Work Experience in a Related Field	226,330	227,940	0.7%	51,445	4,966
Postsecondary Vocational Award	171,920	180,470	5.0%	46,273	12,351
Associates Degree	125,230	140,460	12.2%	39,654	15,433
<b>High-Skill Jobs</b>	<b>569,280</b>	<b>611,550</b>	<b>7.4%</b>	<b>175,313</b>	<b>49,358</b>
Bachelor's Degree	355,370	384,950	8.5%	110,559	33,033
Bachelor's Degree Plus Work Experience	102,470	103,080	0.8%	30,046	3,982
Masters Degree	42,550	47,810	12.6%	14,344	5,362
Doctoral Degree	33,520	37,600	12.3%	10,512	4,129
First Professional Degree	35,370	38,110	7.7%	9,852	2,852
<b>Total Jobs</b>	<b>2,861,260</b>	<b>2,954,510</b>	<b>3.3%</b>	<b>829,640</b>	<b>162,612</b>

Source: MERIC, 2010-2012 Missouri Long-term Occupational Projections

Across industries for Missouri between 2008 and 2018, employment is projected to grow by 3.6 percent. From 2008 to 2018, there will be 179 industries, of the 302, located in Missouri that will have at least some positive growth over the ten years. The top ten fastest growing Missouri industries, reflected in Table 8, are averaging a 13.2 percent growth in employment by 2018. These top industries demonstrate substantial growth trends within the Health Care, Education, and Professional and Technical Services industries within the state.

TABLE 8: FASTEST GROWING INDUSTRIES 2008–2018

INDUSTRY CODE	TITLE	EMPLOYMENT		CHANGE 2008–2018	
		2008 ESTIMATED	2018 PROJECTED	NUMERIC	PERCENT
561200	Facilities Support Services	820	1390	574	69.5%
624100	Individual and Family Services	22,020	32260	10,240	46.5%
721200	RV (Recreational Vehicle) Parks and Recreational Camps	870	1250	381	43.7%
621600	Home Health Care Services	15,670	21890	6,220	39.7%
611600	Other Schools and Instruction	4,300	5970	1,672	38.8%
621900	Other Ambulatory Health Care Services	4,200	5820	1,620	38.6%
511200	Software Publishers	2,760	3590	828	30.1%
488400	Support Activities for Road Transportation	1,310	1700	387	29.8%
624400	Child Day Care Services	15,060	19520	4,467	29.6%
611700	Educational Support Services	1,340	1720	374	28.4%

Source: MERIC, 2008-2018 Missouri Long-term Occupational Projections

## TARGET INDUSTRY CLUSTERS

The Missouri Department of Economic Development adopted the 2011 Strategic Initiative for Economic Growth.<sup>2</sup> The purpose of the initiative was to identify high growth innovative industries in the state as a frame for targeted economic and workforce efforts to spur long-term economic growth that transforms the Missouri economy over the next five years. Seven broad industry clusters were identified to present a higher than normal potential for employment and economic growth. The clusters include: Advanced Manufacturing, Biosciences, Energy Solutions, Health Sciences and Services, Information Technology, Financial and Professional Services, and Transportation and Logistics.

- Advanced Manufacturing refers to those industries that convert materials into products but are more technology intensive and employ a larger than average number of workers in research and development. It includes those operations that incorporate new technologies, production processes and systems to increase the efficiency and sustainability of the manufacturing process. Included in Advanced Manufacturing are two niches: **Aerospace and Defense, and Transportation Equipment.**
- Energy Solutions refers to all energy technologies which provide long-term, low-impact, high value energy solutions for residential and commercial use. The cluster includes operations in research and development for five types of nonpetroleum-based energy sources: **nuclear power, natural gas, wind energy, solar energy, and biomass/biofuels.**
- The Biosciences include diverse industries that fuse chemical and biological sciences to support growth and sustainability in the agriculture and medical fields. Industry activity includes both production and research and development for pharmaceuticals, medical devices, crop and livestock, and chemical manufacturing. Included in Biosciences are three niches: **Plant and Agriculture Technology, Companion and Feed Animal Sciences, and Biomedical.**
- The Health Care Sciences and Services encompass the administration and delivery of health care along with health innovations that advance the ease and efficiency of delivering services to patients, while providing the opportunity for these innovations to trigger start-up companies. Included in Health Care Sciences and Services are three niches: **Health Care Innovation, Health Sciences, and Health Services.**
- Information Technology refers to a branch of engineering that employs the use of technology, in both software and hardware, to store, transmit and manage data in various formats for use in virtually every industry. Included in Information Technology are three niches: **Software, Hardware and Systems Design, Data Centers, and Technology Resource Centers.**
- Financial and Professional Services refers to the collection of industries that provide money management, financial planning, legal, public relations, insurance, business support and technical consulting. Included in Financial and Professional Services are three niches: **Customer Care Centers, Financial Services, and Professional Services.**
- Transportation and Logistics refers to the engineering and management of a supply chain network to provide goods to consumers and industries in an efficient and timely manner. Included in Transportation and Logistics are three niches: **Warehousing, Transportation, and Wholesale Trade.**

Based on current and project Missouri economic activity, these seven clusters were identified as affording Missouri a strategic advantage relative to other states. By building on the strengths of cooperative companies, suppliers, services providers, trained labor force and research institutions, which create a cluster of innovation, Missouri can capitalize on its growth potential.

# FUTURE CHALLENGES

Missouri's opportunities for long-term economic growth will increasingly depend on a well educated, flexible workforce that responds quickly changing business needs. Targeted efforts to prepare workers for this bright future start at a young age, are honed through higher education and work experience, and are sustained by a culture and ability to embrace life-long learning.

Taking bold, and sometimes difficult, steps to equip Missouri's workforce for success will be one of the strongest economic development tools as state can have in retaining and attracting the industries of the future.

*Some key strategies to consider include:*

- Continued focus on strengthening the primary and secondary education system to include the adoption of best practices for learning, strong science, math, and technology curriculums, and further introduction of soft skill, business, and financial awareness into the learning process.
- Increasing the ties between higher education institutions, workforce trainers, economic developers, and businesses so that:
  - Curriculums can be designed to better meet industry needs. Sector and region-based councils can be an effective method for dialog, especially when discussions result in focused outcomes.
  - Connections between students and businesses can be strengthened through practices such as introductions of local businesses into the classroom environment and development of internship programs.
  - Targeted industries and occupations identified as vital to the state's long-term economic prosperity can help guide training investments and curriculum design.
- Increasing the collaboration among higher education institutions and workforce training providers to include:
  - Development of common course definitions and measures to allow easier transfer of student credits between institutions. May start with basic skills course alignments and progress to more advanced training over time.
  - Development and sharing of a common credentialing system among training providers to give businesses confidence in workforce skills.
  - Creating and sharing participant information across institutions to better measure outcomes.
- Continue efforts to develop affordable, flexible, and credential-based training for adult workers and businesses to support a culture of life-long learning. From an older population that needs to keep up on new skills, a disadvantage youth who needs remedial training, or the business that needs flexible OJT, creative education methods that provide substantive skills is an on-going challenge but one that must be faced to prepare our workforce for the jobs of the future.

## REFERENCES

1. The 2010 State New Economy Index: Benchmarking Economic Transformation in the States. Atkinson, Robert D., and Andes, Scott, The Kauffman Foundation and Information Technology and Innovations Foundation, November 2010.
2. Adapted from the State of Missouri Strategic Initiative for Economic Growth and the Target Cluster and Marketing Analysis completed by Market Street Services, Inc. March 2011.
3. Bureau of Economic Analysis. Gross Domestic Product by State table: Missouri. August 2011.
4. WiserTrade.org. State Exports Data: Missouri. August 2011.
5. 2011 State Business Climate Index (Eighth Edition). Padgitt, Kail M., The Tax Foundation. October 2010.
6. Missouri Office of Administration—Budget & Planning-Population Projections.
7. NCES State Profile, data extracted from IPEDS 2008-2009. (<http://nces.ed.gov/programs/stateprofiles/sresult.asp?mode=short&sl=29>) Aug. 2011
8. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2003 National Assessment of Adult Literacy and 1992 National Adult Literacy Survey.
9. Measuring Up 2008, The National Center for Public Policy and Higher Education.
10. U.S. Department of Education, National Center for Education Statistics. (2011). Digest of Education Statistics, 2010 (NCES 2011-015), Chapter 6.
11. Enhanced Missouri Student Achievement Activity, Missouri Department of Higher Education. Table 2, Number and Percent Distribution of ACT-Tested First-time Degree-seeking Undergraduates Enrolled in Public Baccalaureate and Higher-degree-granting Institutions by Enhanced Raw Score Intervals, Fall 2009.
12. Missouri Department of Higher Education. Table 33: Historical Trend in Total Full-Time Equivalent Enrollment at Public Institutions, Fall 1981, Fall 2004-Fall 2009.
13. Missouri Department of Higher Education. Table 97: Total Awards Conferred by Public Institutions, By Discipline Area, FY2009.
14. Missouri Economic Research and Information Center, Missouri Long-term 2008-2018 Occupational Projections.





**M I S S O U R I**

Department of Economic Development

